THE CLAIMS

What is Claimed is:

1. A surface expression vector of a target protein, comprising a *fadL* gene encoding an *E. coli* outer membrane protein (FadL), an antibiotic–resistant gene, a promoter, a gene encoding a target protein, and a gene recombinant which is constructed, to be expressed on the surface of the cell in a form fused with the FadL protein if the target protein-encoding gene is expressed in a host cell.

2. The surface expression vector of a target protein according to claim 1, wherein a linker is inserted into the middle portion of the *fadL* gene, and the target protein-encoding gene is inserted into the linker.

3. The surface expression vector of a target protein according to claim 1, wherein the C-terminal end of the *fadL* is truncated, and the target protein-encoding gene is inserted into the position of the truncated C-terminal end.

4. The surface expression vector of a target protein according to claim 1, wherein a base sequence following the ninth loop of the *fadL* gene is truncated, and the target protein-encoding gene is inserted into the position of the truncated base sequence.

5. The surface expression vector of a target protein according to claim 1, wherein the target protein is a protein with a portion of amino acid sequence eliminated, or a protein mutated position-specifically, to facilitate the expression of the target protein on the surface.

6. The surface expression vector of a target protein according to claim 1,

wherein the promoter is a trc promoter or a gntT104 promoter.

7. A microorganism transformed with the surface expression vector of any one claim among claims 1 to 6.

8. The transformed microorganism according to claim 7, wherein the microorganism used for the transformation is modified such that an extracellular or intracellular protease that degrades the target protein, cannot be produced, to facilitate the cell surface expression of the target protein.

9. The transformed microorganism according to claim 7, wherein the microorganism is bacterium.

10. The transformed microorganism according to claim 9, wherein the bacterium is *E. coli*.

11. A method for the cell surface expression of a target protein, the method comprising the steps of: culturing the transformed microorganism of any one claim among claims 7 to 10, to express a target protein on the cell surface of the microorganisms; and collecting the cells having the target protein expressed on the surface thereof.

12. The method for the cell surface expression of a target protein according to claim 11, wherein the target protein is a protein selected from the group consisting of hormones, hormone analogues, enzymes, enzyme inhibitors, signaling proteins or parts thereof, antibodies or parts thereof, single chain antibodies, binding proteins, binding domains, peptides, antigens, adhesion proteins, structural proteins, regulatory proteins, toxin proteins, cytokines, transcriptional regulators, blood coagulation factors, and plant defense-inducing proteins.

13. The method for the cell surface expression of a target protein according to claim 12, wherein the enzyme is lipase.

14. A bioconversion method, characterized by using the cells which are produced by the method of claim 12, and have a target protein with enzymatic activity expressed on the surface thereof.

15. A method for producing protein arrays, characterized by immobilizing the cells which are produced by the method of claim 12, and have a target protein expressed on the surface thereof, on the surface of a substrate.

16. A method for preparing antibodies in vertebrate animals, the method comprising the steps of: administering the cells which are produced by the method of claim 12, and have antigens expressed on the surface thereof, to the vertebrate animals except for human beings, thereby inducing an immune response in the vertebrate animals; and collecting antibodies produced by the immune response.

17. A method for producing a chiral compound, which comprises optically resolving a racemic ester compound into chiral ester, chiral organic acid or chiral alcohol by lipase, the method being characterized by using the lipase expressed on the surface of the cells produced by the method of claim 13.

18. A method for improving a target protein, the method comprising the steps of:

(a) constructing a mutant library of a gene encoding a target protein;

(b) constructing a gene recombinant which contains the gene mutant library and a *fadL* gene to express the mutant of the target protein in a form fused with a FadL protein;

(c) transforming a host cell with either the gene recombinant or a vector containing the gene recombinant, the host cell being selected from the group consisting of gram negative bacteria, gram positive bacteria, actinomyces, yeasts and molds;

(d) culturing the transformed host cells to express the gene mutant library on the cell surface; and

(e) screening the cells on which a target protein with improved characteristics have been expressed.

19. The method for improving a target protein according to claim 18, wherein the screening step is performed by using any one selected from the group consisting of an activity of the target protein, a protein recognizing a substance labeled to the target protein, a labeled ligand binding to the target protein, and an antibody binding specifically to the target protein.